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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Reissue Patent Application of

Jay SHEERER et al.

Atty. Ref.: 10-1470

Reissue Appln No. 10/829,477

Group: 1731

Granted: April 22, 2004

Examiner: Walls, Dionne

For: METHOD OF TREATING MATERIAL IN A  
CONTINUOUS DIGESTER

March 18, 2005

\* \* \* \* \*

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**SUBSTITUTE COPY OF CLAIMS (REVISED)**

In response to a request by Examiner Walls during a telephone conferences of February 28 and March 8, 2005, please accept this substitute copy of claims to be included in the original reissue application:

What is claimed is:

1. A method of treating a liquid slurry of comminuted cellulosic fibrous material under cooking conditions in a substantially vertical continuous digester, having at least one substantially annular screen surface, said digester having a substantially cylindrical wall with at least one diameter-changing transition below the cylindrical wall, said method comprising the steps of substantially continuously:
  - (a) introducing the slurry of comminuted cellulosic fibrous material into the digester adjacent the top thereof, to flow downwardly in the digester in a first cylindrical flow path having a first diameter and defined by the cylindrical wall;
  - (b) screening the slurry to remove liquid therefrom using the at least one screen surface, having a substantially constant screen surface opening size and percentage of open area, in the first flow path;
  - (c) during step (b) causing the slurry of comminuted cellulosic fibrous material to transition at the at least one diameter-changing transition from the first cylindrical flow path to a first diverging flow path having an initial second diameter;
  - (d) after step (c), moving the slurry downward in a second cylindrical flow path, and
  - (e) removing the chemical pulp from adjacent the bottom of the digester.
2. A method as recited in claim 1 wherein the second diameter is equal to or greater than the first diameter and comprising the further step (f), after step (d), and before step (c), of causing the downwardly moving slurry to move in a second diverging flow path having an initial diameter equal to or greater than the second diameter.
3. A method as recited in claim 2 comprising the further step of repeating steps (b), (c), (d), and (f) at least once prior to step (e).
4. A method as recited in claim 3 wherein both the first and second diverging flow paths diverge at a substantially constant angle to the vertical of between about 0.5–10°.
5. A method as recited in claim 3 wherein the second flow path diverges at a substantially constant angle to the vertical of between about 0.5–5°.
6. A method as recited in claim 1 comprising the further step of heating the liquid removed in the practice of step (c) and reintroducing the heated liquid into the digester adjacent where it was removed.
7. A method as recited in claim 1 wherein the first diverging flow path diverges at an angle to the vertical of between about 0.5–10°, and step (b) is practiced using a substantially continuous screen surface.
8. A method as recited in claim 1 wherein the first diverging flow path diverges at a substantially constant angle to the vertical of between about 0.5–5°.
9. A method as recited in claim 2 comprising the further step of heating the liquid removed in the practice of step (c) and reintroducing the heated liquid into the digester adjacent where it was removed.
10. A method as recited in claim 2 wherein the second flow path diverges at an angle to the vertical of between about 0.5–10°, and step (b) is practiced using a substantially continuous screen surface.
11. A method as recited in claim 2 wherein the second flow path diverges at a substantially constant angle to the vertical of between about 0.5–5°.
12. A method as recited in claim 8 comprising the further step of heating the liquid removed in the practice of step (c) and reintroducing the heated liquid into the digester adjacent where it was removed.
13. A method of treating a liquid slurry of comminuted cellulosic material in a substantially vertical vessel having at

least one substantially annular screen surface, said method comprising the steps of:

- (a) introducing the slurry into the vessel to flow substantially vertically therein through a first cylindrical passage defined by a cylindrical section of the vessel, and said slurry moving in a flow direction;
  - (b) while the slurry is flowing in the flow direction and in a diameter transition section of the vessel, below the first cylindrical passage screening the slurry to remove liquid therefrom while causing the liquid to diverge in the flow direction at an angle of between about 0.5–10° using the at least one screen surface, having a substantially constant screen surface opening size; and
  - (c) downstream of (b) in the flow direction and after the slurry flows through a second cylindrical passage below the diameter transition section, removing the slurry from the vessel.
14. A method as recited in claim 13 wherein steps (a)–(c) are practiced substantially continuously, and so that the flow direction is substantially downward.
15. A method as recited in claim 13 wherein the vessel has at least two diameter transitions, and wherein step (b) is practiced at or just downstream of each diameter transition prior to the practice of step (c).
16. A method as recited in claim 13 wherein (b) is practiced to cause the liquid to diverge in the flow direction at an angle of between about 0.5–5°.
17. A method as recited in claim 14 wherein the vessel has at least two diameter transitions, and wherein step (b) is practiced at or just downstream of each diameter transition prior to the practice of step (c).

Jay SHEERER et al.  
Reissue Application of Patent No. 6,375,796

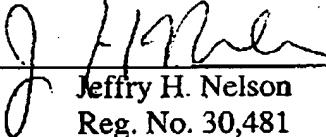
**REMARKS**

Examiner Walls requested that the claims of the patent under reissue (US Patent 6,129,816) be substituted for the claims originally submitted with the reissue application. The claims originally submitted with the reissue application included the amended claims, which are now being resubmitted by way of a preliminary amendment.

All claims are in good condition for allowance. If any small matter remains outstanding, the Examiner is requested to telephone the undersigned. Prompt reconsideration and allowance of this application is requested.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

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